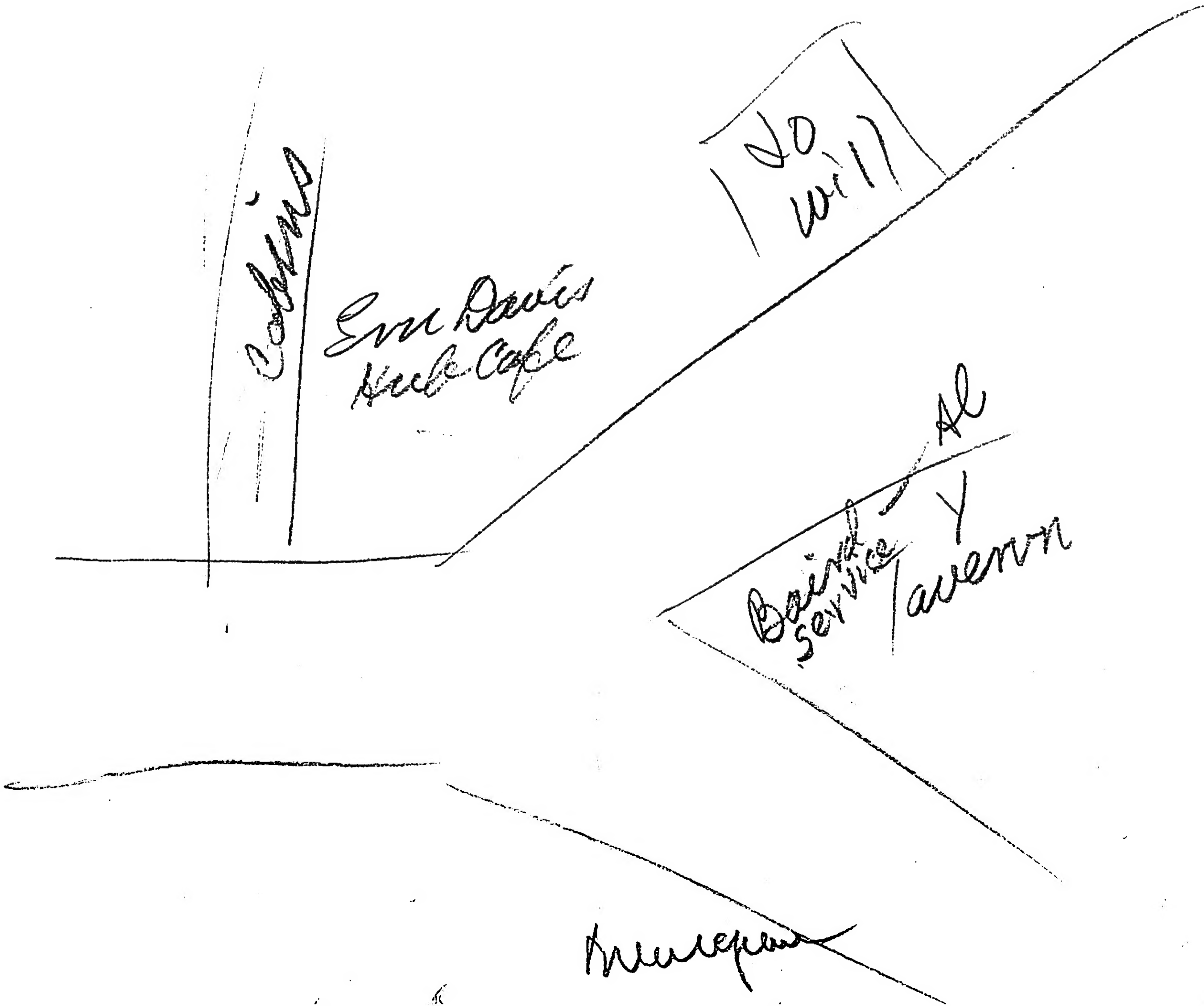

Tish Clegg

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55 South 5th East
Heber City, Utah 84032

THE HETEROPHILE ANTIBODY

Patients acutely infected with EBV develop Paul-Bunnell-Davidsohn type heterophile antibodies (rabbit group). EB virus infections do not induce production of Forssman antibodies (guinea pig group). The differential heterophile absorption test for confirmation of the diagnosis of acute infectious mononucleosis is based on the fact that the heterophile antibody in infectious mononucleosis falls into the "rabbit" and not the "guinea pig" group. Of great interest is the fact that many **Orientals fail to develop any heterophile antibodies what so ever when infected with EBV.** Lymphoid cell lines obtained from Orientals, in contrast to Occidentals, usually express heterophile antigens which may explain why many Orientals do not develop heterophile antibodies.

SEROLOGIC REACTIONS OF TWO MAJOR CLASSES OF HETEROPHILE AB

		REACTION WITH			
CLASS	DISEASE	HORSE RBC	SHEEP RBC	OX RBC	G. PIG KIDNEY
Rabbit (P-B-D)	Mono	POS+	POS+	POS+	NEG-
Guinea Pig (Forssman)	Serum sickness	POS+	POS+	NEG-	POS+

WHEN SHOULD YOU ORDER EBV-SPECIFIC SEROLOGIC TESTS?

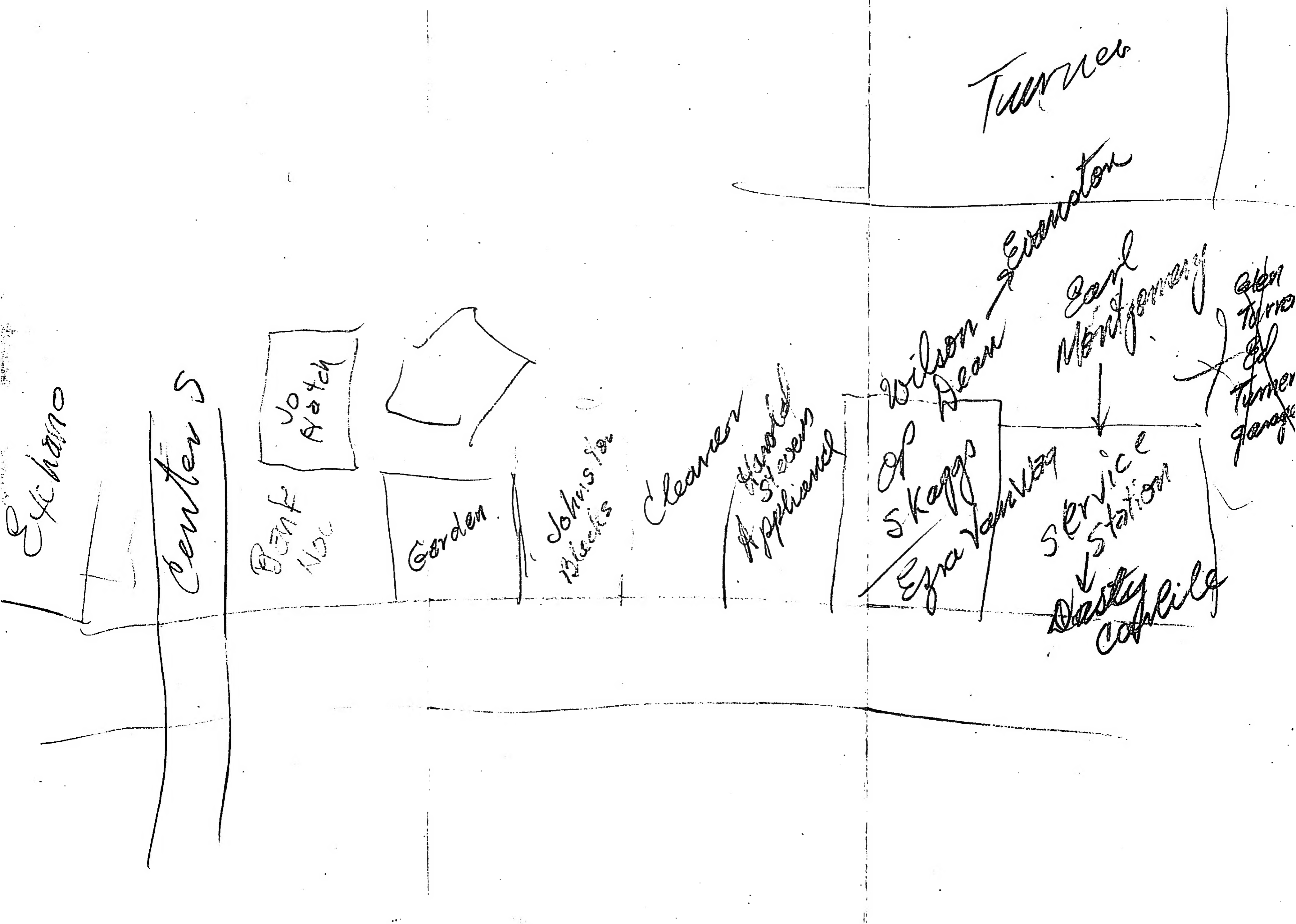
Order specific tests for IgG and IgM antibodies to EBV Capsid Antigen (Anti-VCA, IgG & Anti-VCA, IgM), and IgG antibodies to Nuclear Antigen (Anti-EBNA), in patients with negative heterophile tests who have a blood smear or a clinical picture suggestive of infectious mononucleosis. This is especially true in adults in whom typical clinical signs and symptoms are not always present, and in infants and children in whom typical heterophile responses may not occur. The heterophile test is not perfect and a more certain diagnosis can be made when specific EBV serologic tests are ordered. In addition, consider ordering serologic tests for CMV and Toxoplasmosis when the heterophile test is negative but the clinical findings suggest infectious mononucleosis.

SENSITIVITY AND SPECIFICITY OF HETEROPHILE TEST WITH DIFFERENTIAL ABSORPTION

PATIENT GROUP	SENSITIVITY	SPECIFICITY
Adolescents	96 %	93 %
Adults >40 years	89 %	93 %

IS THERE A SYNDROME ASSOCIATED WITH REACTIVATION OF EBV?

Because the virus resides in the infected host for life, it's always possible for the virus to begin replicating again. Renewed viral replication may be associated with recurrence of the disease. Today, specific serologic tests are available that usually respond only when the virus is replicating. **Active viral replication is usually associated with a high titer of IgG antibody to the viral capsid antigen (>160) and antibody to early antigen.** [1,2,5]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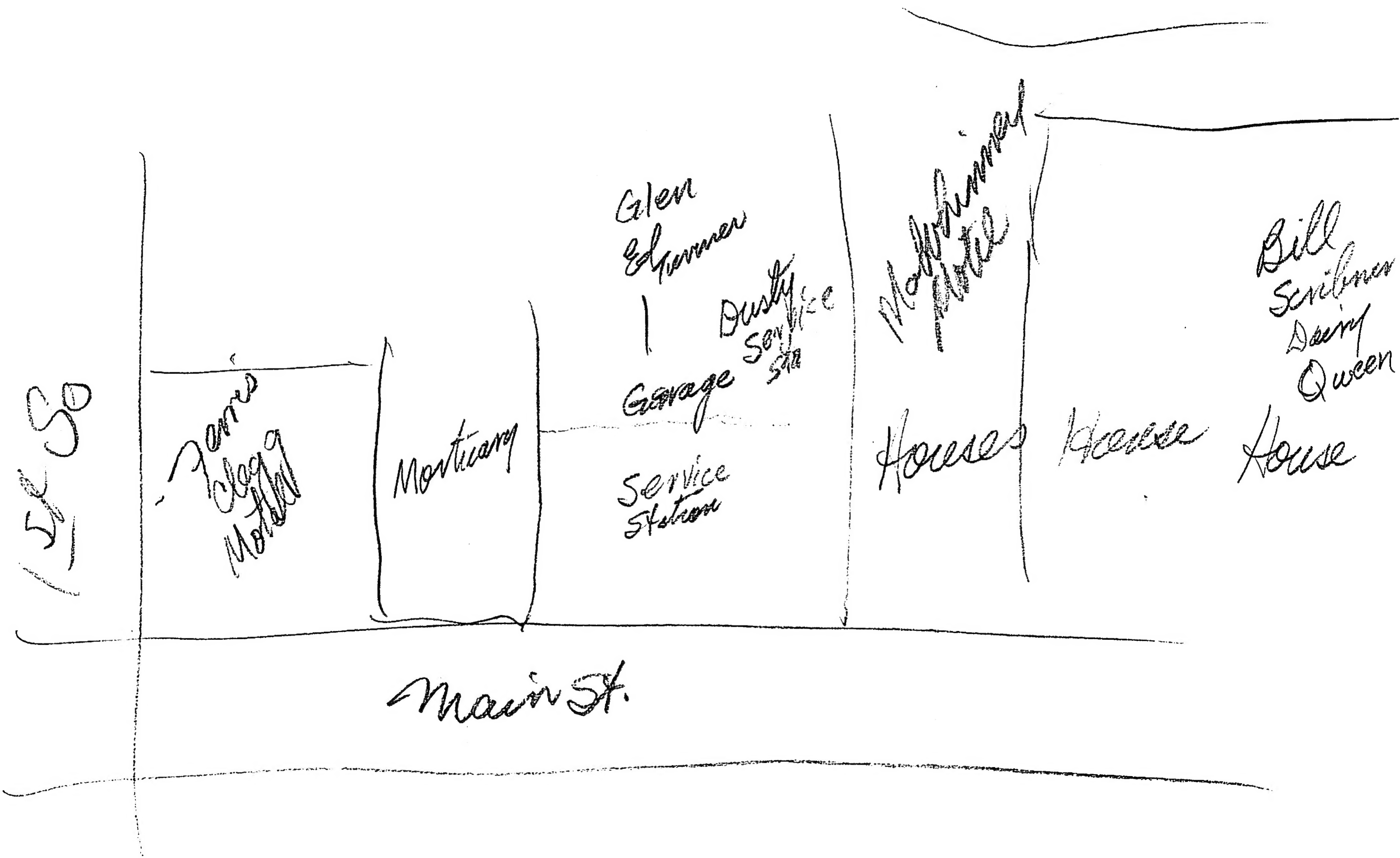
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The syndrome of chronic mononucleosis is characterized by disabling fatigue and malaise, low-grade afternoon fever, and variable nonspecific symptoms including sore throat. The results of serologic tests include: a negative heterophile titer, and positive tests for Anti-VCA IgG, Anti-EA, and Anti-EBNA.

SEROLOGIC TEST RESULTS FOR EBV IN CHRONIC MONONUCLEOSIS

- Positive Anti-VCA, IgG, titer >160
- Positive Anti-EA, titer >5
- Positive Anti-EBNA
- Negative Anti-VCA, IgM
- Negative Heterophile Screening Test

SEROLOGIC TESTS FOR CHRONIC MONONUCLEOSIS ARE NOT SPECIFIC

Though there is little doubt about the occurrence of chronic EBV infections, there is doubt about the usefulness of routine serologic tests when making a diagnosis of chronic infectious mononucleosis.[4,6] For example, elevated antibody titers (>40) to early antigen are found in as many as 13 percent of clinically healthy adults. Thus, the specificity of the test for antibodies to early antigen--when searching for chronic infectious mononucleosis-- is only 87 percent. Since clinically significant chronic infections with EBV are rare, but highly fatigued patients are common, most tired patients who test positive for antibodies to early antigen are false positives. [6,7]

CELLULAR IMMUNITY AND EBV INFECTION

Our body's control of EBV is dependent upon a competent cellular immune system--not on humoral immunity. Thus, EBV serologic tests would not be expected to be highly sensitive or specific for chronic disease. In this regard, there is growing evidence that patients with chronic EBV infection may have a selective impairment of cellular immunity. Presumably, they have a defective recognition system for certain components of the nuclear antigen. These patients have extremely high titers to the Viral Capsid Antigen. [1]

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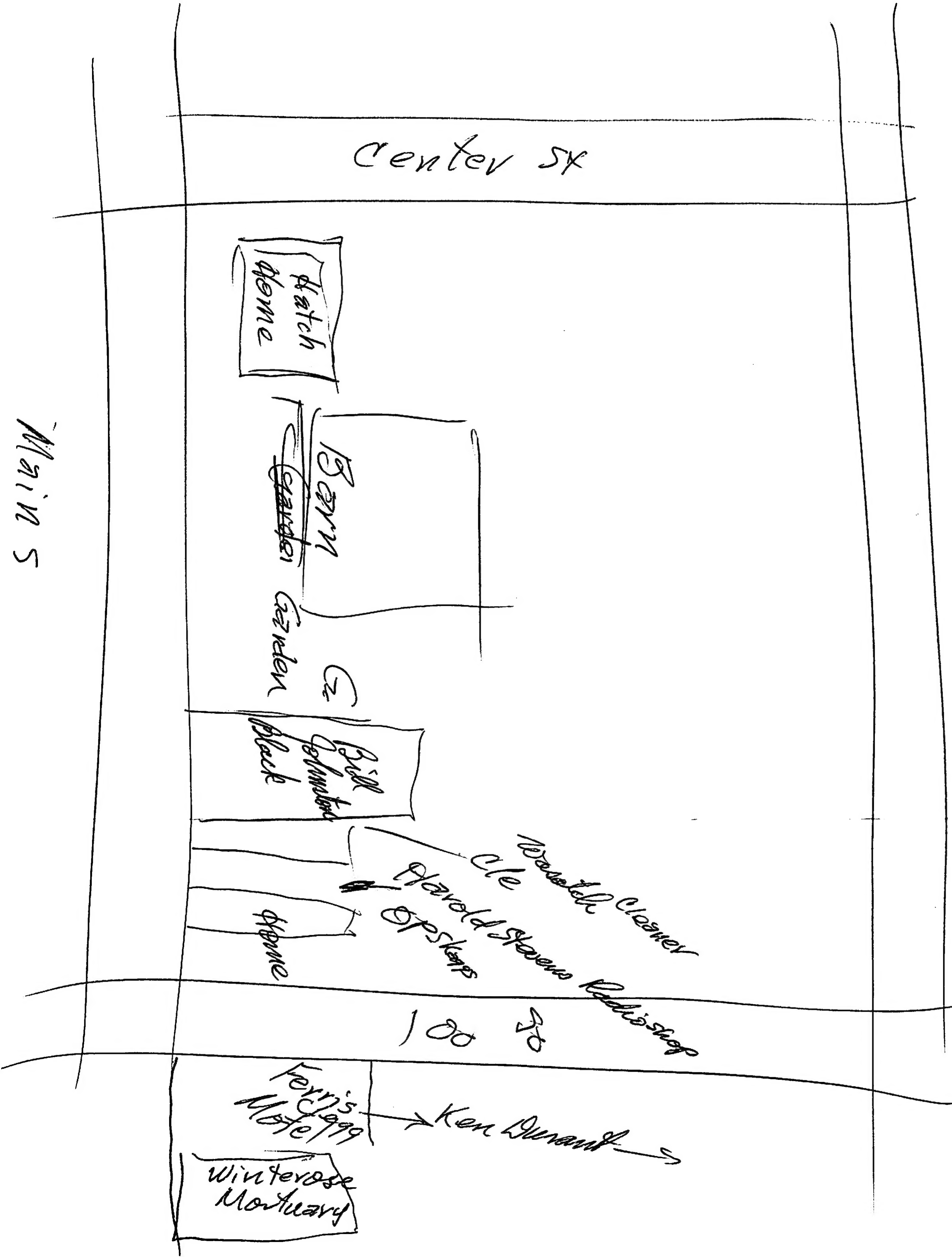
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